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<p>(54) Title: HYGIENIC CONTAINER FOR TOILETS AND OTHER COLLECTORS OF URINE AND EXCREMENTS</p> <p>(57) Abstract</p> <p>The described product intends to maintain an acceptable level of hygiene of toilets and other devices intended to gather faeces and urine (i.e. chamber-pots, kids-pots, pots for handicapped or disabled persons, bed-pans, turkish toilets) or animal excrements, and in the same time of the user himself, by inserting into them a hygienic container, paper-made and disposable by simply flushing the pan (for the western or the turkish toilet) or closing the container and throwing it into a toilet or an appropriate dustbin (for other devices). In particular, the container must have an open side, corresponding to the open surface of the toilet or of the other devices, and for the rest must be closed. This shape allows restraining the faeces, while the organic liquids are able to trespass due to the permeability of the paper, of which the container is made. The container intended for collector other than toilets can also be manufactured with impermeable material, able to collect urine and human faeces without crumbling, in order to allow their shift to an appropriate dustbin without loosing any drop or part of material. A variation can be that of allocating a layer of absorbent material allocated into the container, in correspondence with the lower surface of the collector, so that the liquids are restrained by such layer, making easier the handling of the container once used.</p>			

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DESCRIPTION

HYGIENIC CONTAINER FOR TOILETS AND OTHER COLLECTORS OF URINE AND EXCREMENTS

Technical Field

The invention relates to a paper-made product suitable to fit into a toilet or another collector of urine and excrements in order to reduce contamination both for the device and the user.

Background Art

The hereby described invention aims at resolving the problem of maintaining an acceptable level of hygiene of toilets and other collectors of human urine and faeces (i.e. chamber-pots, kids-pots, pots for handicapped or disabled persons, bed-pans, the so-called turkish toilets) or animal excrements, and at contributing to reduce the waste of water and chemical products.

The use of such devices inevitably causes a contamination of them, which is usually resolved by flushing the pan (for the western and the turkish toilets), by using brushing devices and by cleaning with chemical or hygienising products (liquids or dusts).

In order to avoid hygienic problems for the users especially in community's toilets, a paper toilet seat cover, whose shape fits the toilet scat's shape, can be provided in single-use package or by appropriate dispensers: each person can put this film before sitting on the toilet, avoiding contacts with a surface that could have been previously used or made dirty by other persons.

Disclosure of Invention

The described product intends to maintain an acceptable level of hygiene of toilets and other devices intended to gather faeces and urine (i.e. chamber-pots, kids-pots, pots for handicapped or disabled persons, bed-pans, turkish toilets) or animal excrements, by inserting into them a hygienic container, paper-made and disposable by simply flushing the pan (for the western or the turkish toilet) or closing the container and throwing it into a toilet or an appropriate dustbin (for other devices).

In particular, the container must have an open side, corresponding to the open surface of the toilet or of the other devices, and for the rest must be closed. This shape allows restraining the faeces, while the organic liquids are able to trespass due to the permeability of the paper, of which the container is made.

A simplest version for toilets (a «family version») is characterised by having a radial shape, consisting of three arms, long enough to cover the most part of the internal side of the toilet, and anchored to the toilet's seat cover thanks to the pressure of the seat-cover itself.

The restraining of the faeces decreases in a high quantity the contamination of the toilet or the other devices, eliminating the use of the brush (itself a transmitter of contamination to other

surfaces) and diminishing the use of hygienising products.

The absorbing effect of the material that composes the invention (paper) and the lack of direct contact between the excrements or the urine and the underlying surfaces do have another important consequence. Splashes of excrements or squirts of dirty water or urine are prevented to spread over the toilet or other kind of collector and, moreover, to reach the person or animal using them. Besides improving the cleanliness of the toilet and other kinds of collectors, the described invention thus ensures a full hygiene of the person or animal using them.

The container must be fixed to the upper part of the toilet or of the other devices: the simplest way is to provide it with strips of paper suitable to be fixed to the surface of the toilet or of the other devices.

Another solution can consist in providing the container with a prolongation all around the upper side, in order to make it suitable to cover the seating surface and thus having an higher protective function with regard to the hygiene of the user: to this end, the portion of paper covering the seating surface can be manufactured of a material not permeable to liquids but biodegradable, such as the ones currently used for the existing paper seat covers.

An additional variation can be that of increasing such prolongation in the backside in order to give a fully hygienic protection while using a toilet.

Once used, the container is eliminated in a very easy way: for the toilet, it is left in it and carried away by the pan-flushing; for the other devices it is picked up and thrown into a toilet or an appropriate dustbin.

The container may be manufactured with paper treated with disinfectant and germicidal substances, especially when it is destined to be used for hotels, camping, schools, work places and every other community.

The container intended for collector other than toilets can also be manufactured with impermeable material, able to collect urine and human faeces without crumbling, in order to allow their shift to an appropriate dustbin without loosing any drop or part of material. An useful variation can be that of allocating a layer of absorbent material is allocated into the container, in correspondence with the lower surface of the collector, so that the liquids are restrained by such layer, making easier the handling of the container once used. The purpose of this version of the container is to secure an elimination of urine and excrements in a manner other than throwing the container into the toilet, improving further the cleanliness of the collectors. It is self-evident, in any case, that this version is nothing more than a development of the single inventive idea described above, which takes into account the peculiarity of collectors of urine and excrements others than toilets.

With respect to the prior art, the described invention introduces a new way to maintain an

acceptable level of hygiene, minimising the contaminating impact of the use by the single person. Of course, it does not eliminate the need to clean the toilet or the other devices with the water and the chemical products. But it eliminates completely the use of brushing devices. Moreover, it does reduce the amount of water and chemical products required and the frequency of the cleaning operations. In particular, a smaller quantity of water would be necessary to flush in the toilets.

As described above, the invention also ensures a better protection of the hygiene of the user, if compared to prior art. This protection can become total when a sophisticated version is utilised (complete cover of the toilet seat, prolongation for the backside).

In conclusion, some important consequences derive from the described invention: saving in the use of water; reduction in the use of chemical products, polluting for the environment; improvement of the hygiene both of the toilets and other devices, both of the persons using them; better cleanliness of drain pipes.

Description of Drawings

A correct comprehension of the drawings cannot be separated by the description of the modes for carrying out the invention, hereinafter mentioned.

Here it can be explained that:

- the first page is merely intended to give a first idea of the invention, showing three possible models of the container (Figs. no. 1-6);
- the pages no. 2-3 show four drawings of the container for ordinary toilets, in the most elaborated version (complete cover of the seat, prolongation for the backside, a lower additional space of smaller volume destined to contain excrements), each of whom representing: a frontal view (Fig. no. 7); a view from above (Fig. no. 8); an inclined view, in order to give a three-dimensional perspective (Fig. no. 9); a view of the shape of the container before assembling by the inventor (Fig. no. 10), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container (folding, ticking);
- the pages no. 4-5 show four drawings of the container for ordinary toilets, in the version without the cover of the seat and the prolongation for the backside, but with the lower additional space of smaller volume destined to contain excrements. Each drawing represents: a frontal view (Fig. no. 11); a view from above (Fig. no. 12); an inclined view (Fig. no. 13), in order to give a three-dimensional perspective; a view of the shape of the container before assembling by the inventor (Fig. no. 14), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container;
- the pages no. 6-7 show four drawings of the container for ordinary toilets, in the «family-version» (a sort of «T», fixed to the WC by the porcelain or plastic seat cover), each of whom

representing: an inclined view of the container inserted into the toilet (Fig. no. 15), in order to give a three-dimensional perspective; a frontal view of the container inserted into the toilet (Fig. no. 16); a view from above of the container inserted into the toilet (Fig. no. 17); a view from above of the container (Fig. no. 18), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container;

- the pages no. 8-9 show four drawings of the container for kid-pots, in an elaborated version (complete cover of the seat, prolongation for the backside), each of whom representing: a frontal view (Fig. no. 19); a view from above (Fig. no. 20); an inclined view, in order to give a three-dimensional perspective (Fig. no. 21); a view of the shape of the container before assembling by the inventor (Fig. no. 22), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container;

- the page no. 10 shows two drawings of the container for the so-called «Turkish toilet», representing: a view from above (Fig. no. 23), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container; a frontal view (Fig. no. 24), with indicated the dimensions in centimetres and the scale;

- the pages no. 11-12 show four drawings of the container for pots for handicapped or disabled persons (with complete cover of the seat), each of whom representing: a frontal view (Fig. no. 25); a view from above (Fig. no. 26); an inclined view, in order to give a three-dimensional perspective (Fig. no. 27); a view of the shape of the container before assembling by the inventor (Fig. no. 28), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container;

- the page no. 13 shows two drawings of the container for the bed-pan, each of whom representing: a view of the shape of the container before assembling by the inventor (Fig. no. 29), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container; an inclined view, in order to give a three-dimensional perspective (Fig. no. 30);

- the page no. 14 shows four drawings of the container for animal excrements (with complete cover of the seat), each of whom representing: a view of the shape of the container before assembling by the inventor (Fig. no. 31), with indicated the dimensions in centimetres and the scale, and specified the way to follow to assemble the container; a frontal view (Fig. no. 32); a view from above (Fig. no. 33); an inclined view, in order to give a three-dimensional perspective (Fig. no. 34).

Modes for Carrying Out the Invention

The inventive idea can be realised with regard to different collectors intended to gather faeces, excrements and urine, such as ordinary or western toilets, «turkish» toilets, chamber-pots, kids-

pots, pots for handicapped or disabled persons, bed-pans and similar. It also can be used with respect to collectors of animal excrements, especially for pets.

The common minimal solution is to manufacture a container having an open side, corresponding to the open surface of the toilet or of the other devices, and for the rest closed: the shape of the closed part can be conical, demi-spherical, square or irregular, with or without a lower additional space of smaller volume destined to contain excrements. What is important is that it is fit to be allocated in the internal part of the WC or of the other devices and to collect human faeces or animal excrements. The lower additional volume should be inserted into the water.

The container must be fixed to the toilet or other collectors, and thus two options are basically possible:

- a system of self-adhesive strips, preferably from two to four, able to anchor the container to the upper part or the external border of the WC or of the other devices (see Figs. no. 5-6);
- a prolongation all around the upper side, in order to make it suitable to cover the upper surface and thus having a protective function with regard to the hygiene of the user (see Figs. no. 1-2-3-4).

An additional variation can be that of increasing such prolongation in the back side in order to give a better hygienic protection while using a toilet, thanks to the coverage of the toilet seat cover (see Figs. no. 7-8-9-10).

As for the so-called turkish toilet, the shape of the container must be adapted to the peculiarity of it: thus, it must be formed by a flat film, able to cover the whole surface of the toilet, and a central part of conic, demi-spherical, cylindrical, square or other shape, able to fit into the hole of the toilet for a small length. Moreover, it does not require any anchoring device, being sufficient that the hygienic container is leant against the whole surface, so that the feet of the person hold it tight (see Figs. no. 23-24).

The dimensions of the container vary in function of the toilet or devices used. Some examples are given in Figs. no. 3-5-18 (for a toilet), in Fig. no. 22 (for kids-pots), in Figs. no. 23-24 (for the so-called turkish toilet), in Fig. no. 28 (for pots for handicapped or disabled persons), in Fig. no. 29 (for the bed-pan), in Fig. no. 31 (for collectors of animal excrements).

The container must be manufactured with paper, even recycled, permeable and biodegradable, but able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes.

The container intended for collector other than toilets can also be manufactured with impermeable material, able to collect urine and human faeces without crumbling, in order to allow their shift to an appropriate dustbin without loosing any drop or part of material. An useful variation can be that of allocating a layer of absorbent material is allocated into the

container, in correspondence with the lower surface of the collector, so that the liquids are restrained by such layer, making easier the handling of the container once used.

The characteristics of the hereby described invention are further pointed out by means of some implementation examples, given as a mere illustration and not intended to be exhaustive.

Various trials have been conducted with regard to the resistance and degradability of several kinds of paper usually on sale.

The paper used for dress-patterns resulted rather suitable: good resistance to faeces, but not full resistance to liquids. It started disaggregating just after few minutes, especially in the lower part, inserted into the water.

The roll tissue used in the kitchen has proved to be too resistant to the water, causing serious problems of obstruction of drainpipes. The same can be said of the paper-rolls used for physicians' beds.

The toilet papers were tested as well. The high quality ones showed low resistance, disaggregating too rapidly, while the low quality ones met all the characteristics of the inventive idea.

Lastly, the towel paper usually delivered in single tissues or in rolls was used. The result was that the most expensive one, being more resistant, raised problems of obstruction of drain pipes, while the economic kind, of less quality and resistance, was suitable to the aims of the invention.

In order to increase the hygienising effect of the container it can be treated with disinfectant substances.

It can be provided to users through dispensers, single-use packages, or cumulative formats.

Although the above description and the annexed drawings contain many specificities, these must not be construed as limiting the scope of the invention, but as merely providing practical illustrations of some of the possible embodiments of this inventive idea. In particular, different sizes can be realised, so as other materials can be used to make the hygienic container, provided that they are, as long as the inner part of the container is concerned, foldable and biodegradable, and, as long as the seat covering area is concerned, not permeable to liquids.

It will be obvious to those skilled in the art that various changes, alterations and modifications to the containers described therein are feasible. To the extent such changes, alterations and modifications do not depart from the spirit and scope of the appended claims, they are intended to be encompassed therein.

Industrial Applicability

The described product is industrially applicable, given that it can be easily manufactured with the use of ordinary machinery, being based on the treatment and the cut of paper, endowed with certain characteristics of resistance and biodegradability, or, where necessary, impermeability.

CLAIMS

- 1) hygienic container for toilets, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having an open side, corresponding to the open surface of the toilet; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the toilet and to touch the toilet water; a series of adhesive strips intended to anchor the container to the seat or to the external border of the toilets.
- 2) hygienic container for toilets, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having an open side, corresponding to the open surface of the toilets; a closed part of conic, deem-spherical, cylindrical, square or other shape, able to fit in the internal surface of the toilet and to touch the toilet water; a prolongation in the open side, able to cover the toilet seat.
- 3) a product according to claim no.2, wherein a square or oval prolongation in the backside of the open side, intended to cover the toilet cover, is added.
- 4) a product according to claims no. 1 or 2 or 3, characterised by having a small prolongation in the lower part, of square, hemispherical, cylindrical or other shape, intended to contain excrements and inserted into the toilet water.
- 5) hygienic container for toilets, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having a radial shape, consisting of three or more arms anchored with self-adhesive strips to the seating surface or to the external border of the toilet.
- 6) hygienic container for toilets, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having a radial shape, consisting of three or more arms anchored to the toilet thanks to the pressure of the seat-cover.
- 7) hygienic container for kid-pots, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having an open side, corresponding to the open surface of the pot; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the pot; a series of adhesive strips intended to anchor the container to the seating part or to the external border of the pot.
- 8) hygienic container for kid-pots, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having an open side, corresponding to the open surface of the kid-pots; a closed part of

conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the pot; a prolongation in the open side, able to cover the seating part of the pot.

9) hygienic container for kid-pots, made of impermeable material, able to collect urine and human faeces without crumbling, characterised by having an open side, corresponding to the open surface of the kid-pots; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the pot; a prolongation in the open side, able to cover the seating part of the pot.

10) a product according to claim no. 9, wherein a layer of absorbent material is allocated into the container, in correspondence with the lower surface of the pot.

11) hygienic container for the so-called turkish toilet, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by a flat film, able to cover the whole surface of the toilet; a central part of conic, demi-spherical, cylindrical, square or other shape, able to fit into the hole of the toilet for a small length and intended to collect faeces.

12) hygienic container for bed-pans, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having an open side, corresponding to the open surface of the bed-pan; a closed part able to fit in the internal surface of the bed-pan; a prolongation in the open side, able to cover the open surface of the bed-pan.

13) hygienic container for bed-pans, made of impermeable material, able to collect urine and human faeces without crumbling, characterised by having an open side, corresponding to the open surface of the bed-pan; a closed part able to fit in the internal surface of the bed-pan; a prolongation in the open side, able to cover the open surface of the bed-pan.

14) a product according to claim no. 13, wherein a layer of absorbent material is allocated into the container, in correspondence with the lower surface of the bed-pan.

15) hygienic container for chamber-pots, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having an open side, corresponding to the open surface of the pot; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the pot; a series of adhesive strips intended to anchor the container to the seating part or to the external border of the pot.

16) hygienic container for chamber-pots, made of impermeable material, able to collect urine and human faeces without crumbling, characterised by having an open side, corresponding to the open surface of the pot; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the pot; a prolongation in the open side, able to cover

the seating part of the pot.

17) a product according to claim no.16, wherein a layer of absorbent material is allocated into the container, in correspondence with the lower surface of the pot.

18) hygienic container for collectors of animal excrements, made of impermeable material, able to collect urine and excrements without crumbling, characterised by having an open side, corresponding to the open surface of the collector; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the collector; a prolongation in the open side, able to cover the seating part of the collector.

19) a product according to claim no.18, wherein a layer of absorbent material is allocated into the container, in correspondence with the lower surface of the collector.

20) hygienic container for pots for handicapped or disabled persons, made of biodegradable paper able to resist to the passage of liquids and to the collecting of human faeces without crumbling for some minutes, characterised by having an open side, corresponding to the open surface of the pot; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the pot; a series of adhesive strips intended to anchor the container to the seating part or to the external border of the pot.

21) hygienic container for pots for handicapped or disabled persons, made of impermeable material, able to collect urine and human faeces without crumbling, characterised by having an open side, corresponding to the open surface of the pot; a closed part of conic, demi-spherical, cylindrical, square or other shape, able to fit in the internal surface of the pot; a prolongation in the open side, able to cover the seating part of the pot.

22) a product according to claim no.21, wherein a layer of absorbent material is allocated into the container, in correspondence with the lower surface of the pot.

fig.1

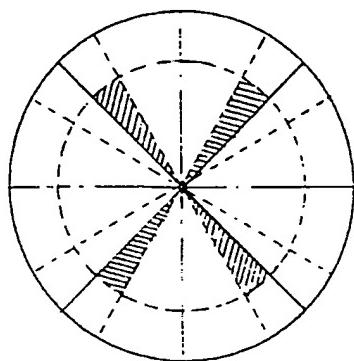


fig.2

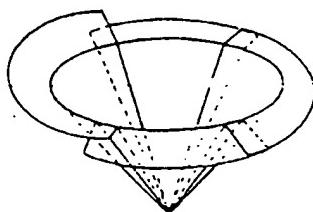


fig.3

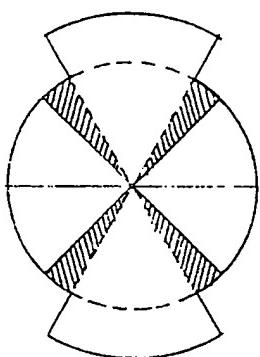


fig.4

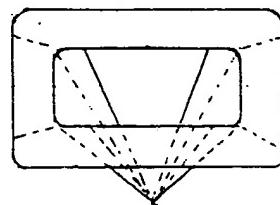


fig.5

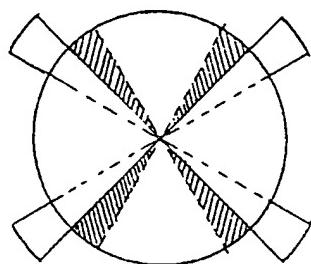


fig.6

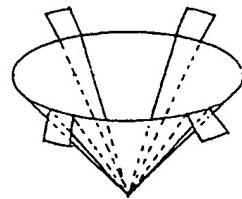


fig. 7

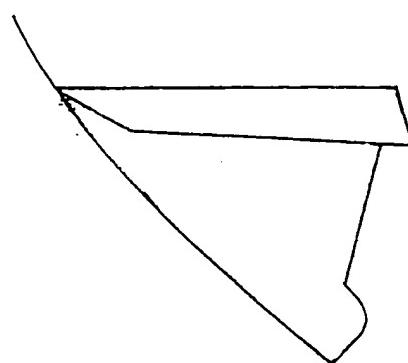


fig. 8

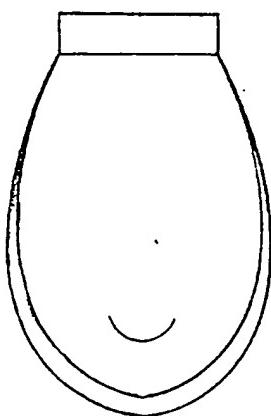


fig. 9

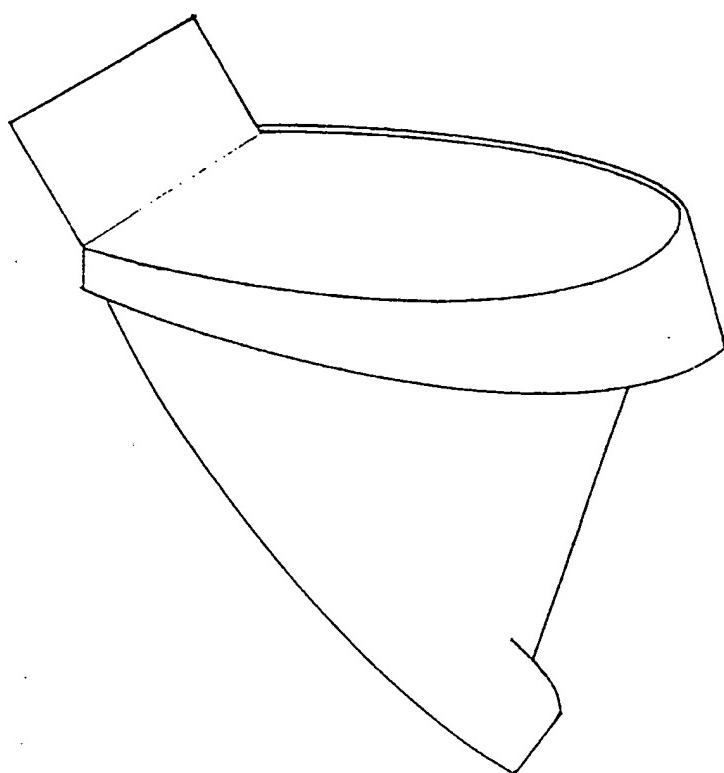


fig.10

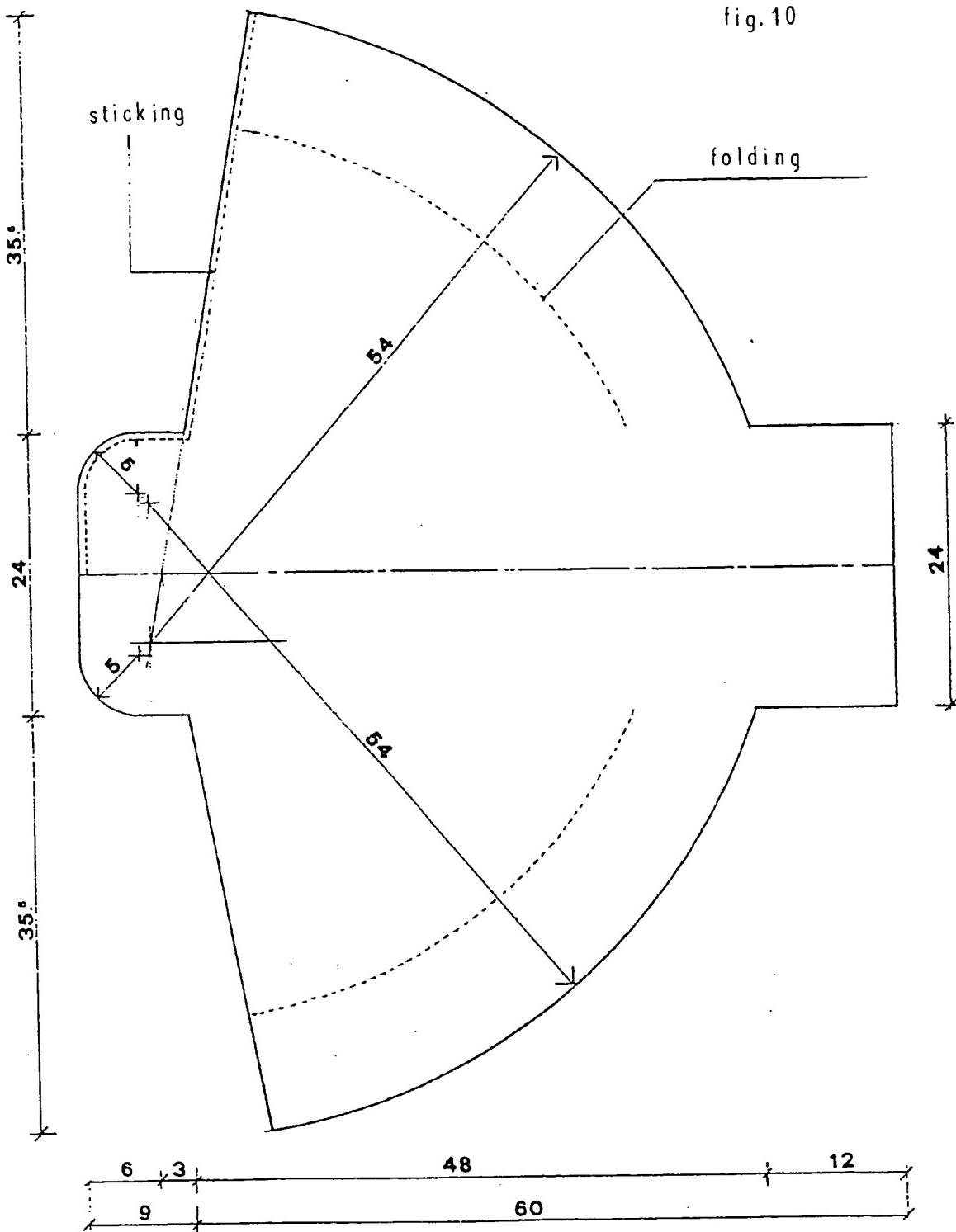


fig.11

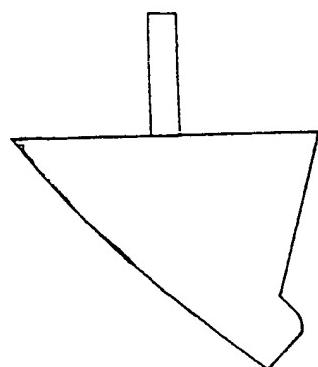


fig.12

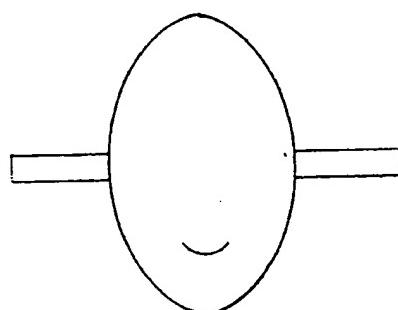


fig.13

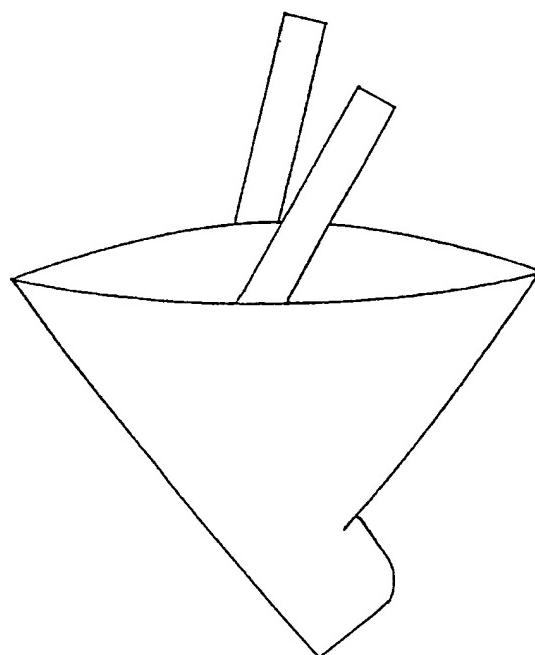
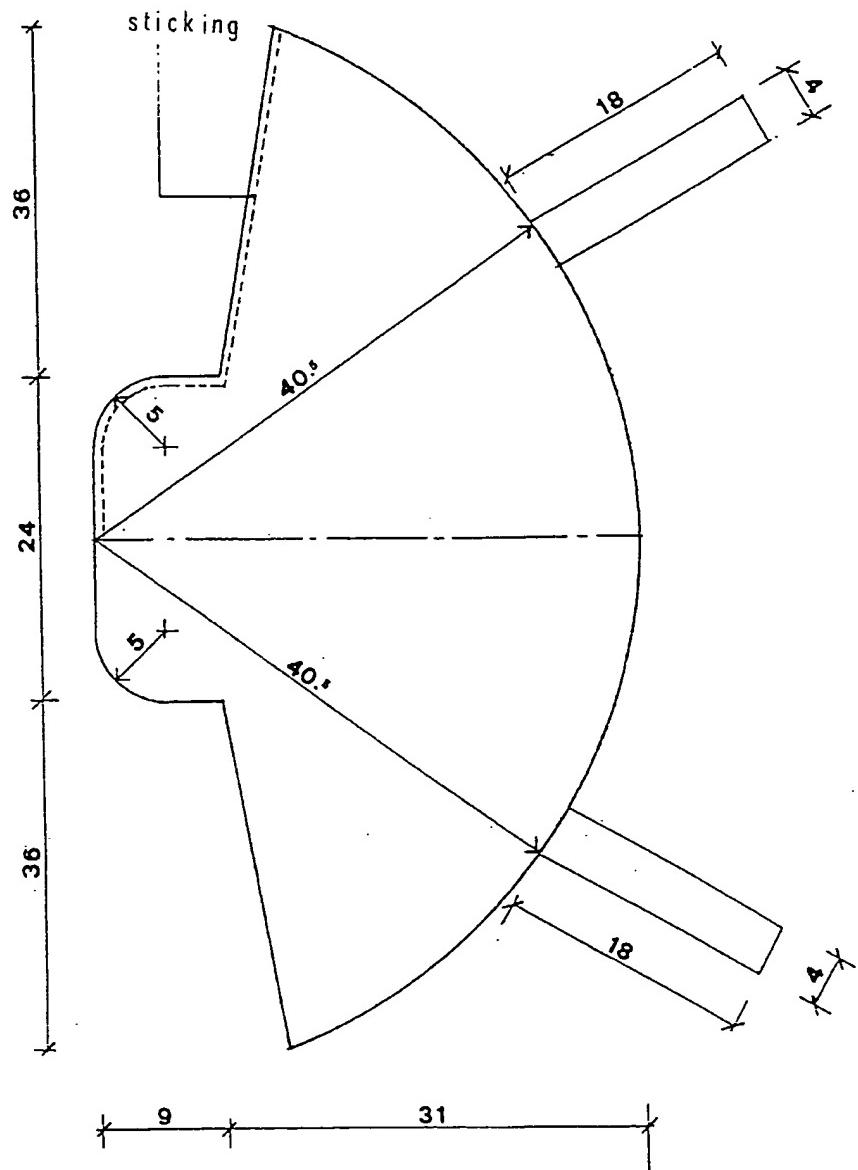


fig. 14



scale 1:5

fig.15

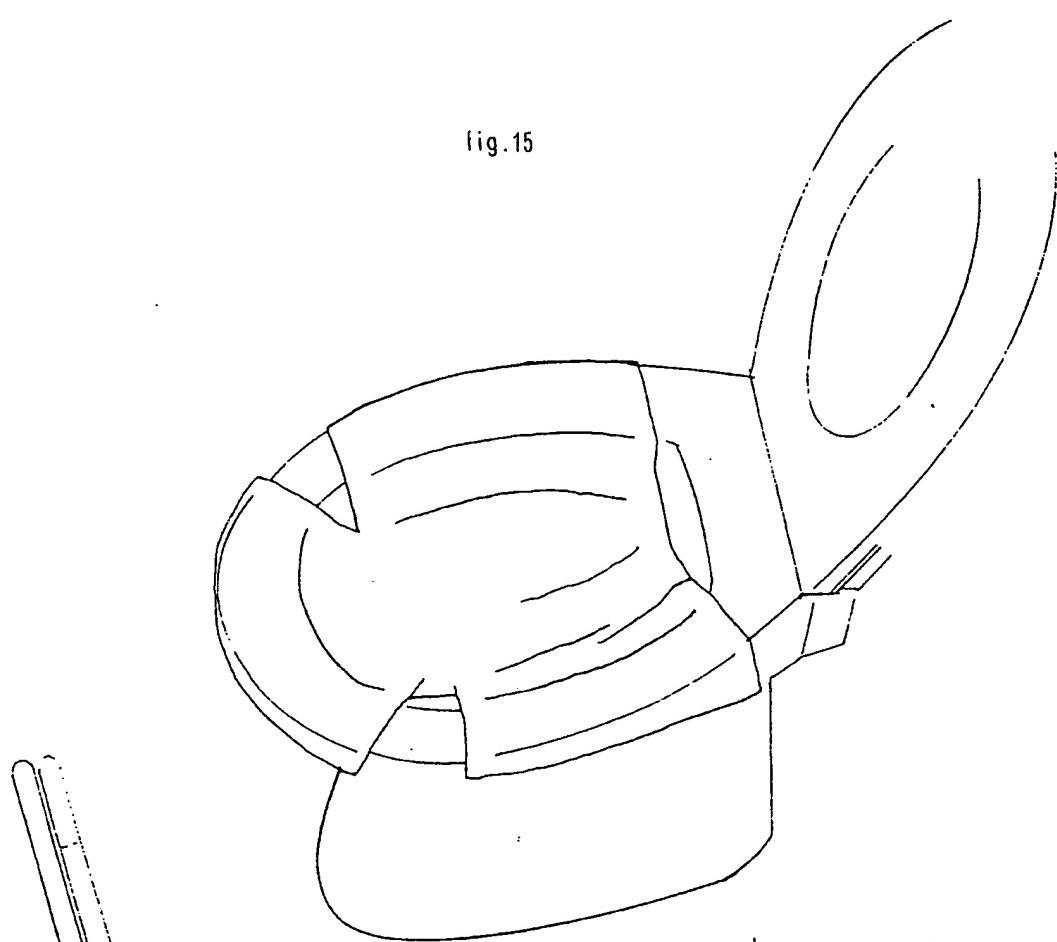


fig.16

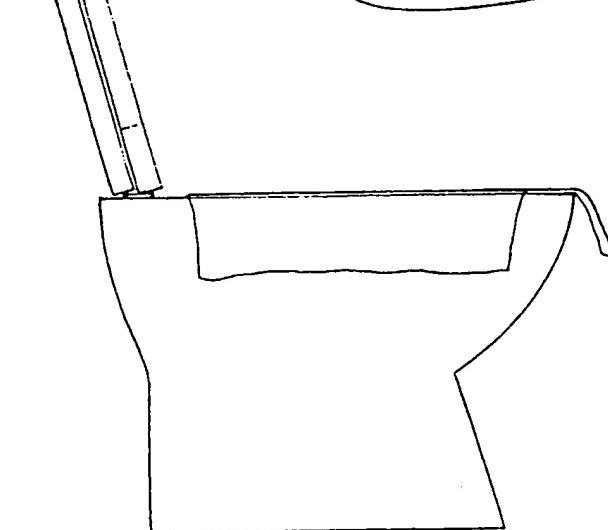


fig.17

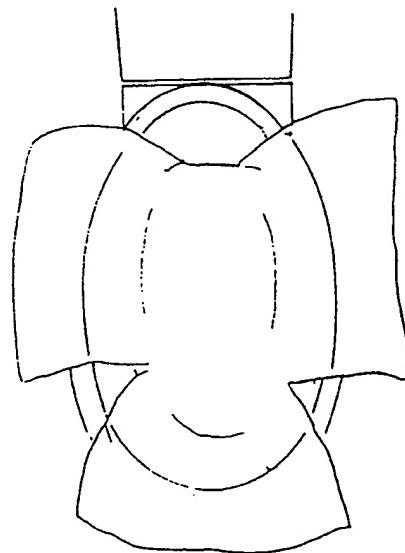
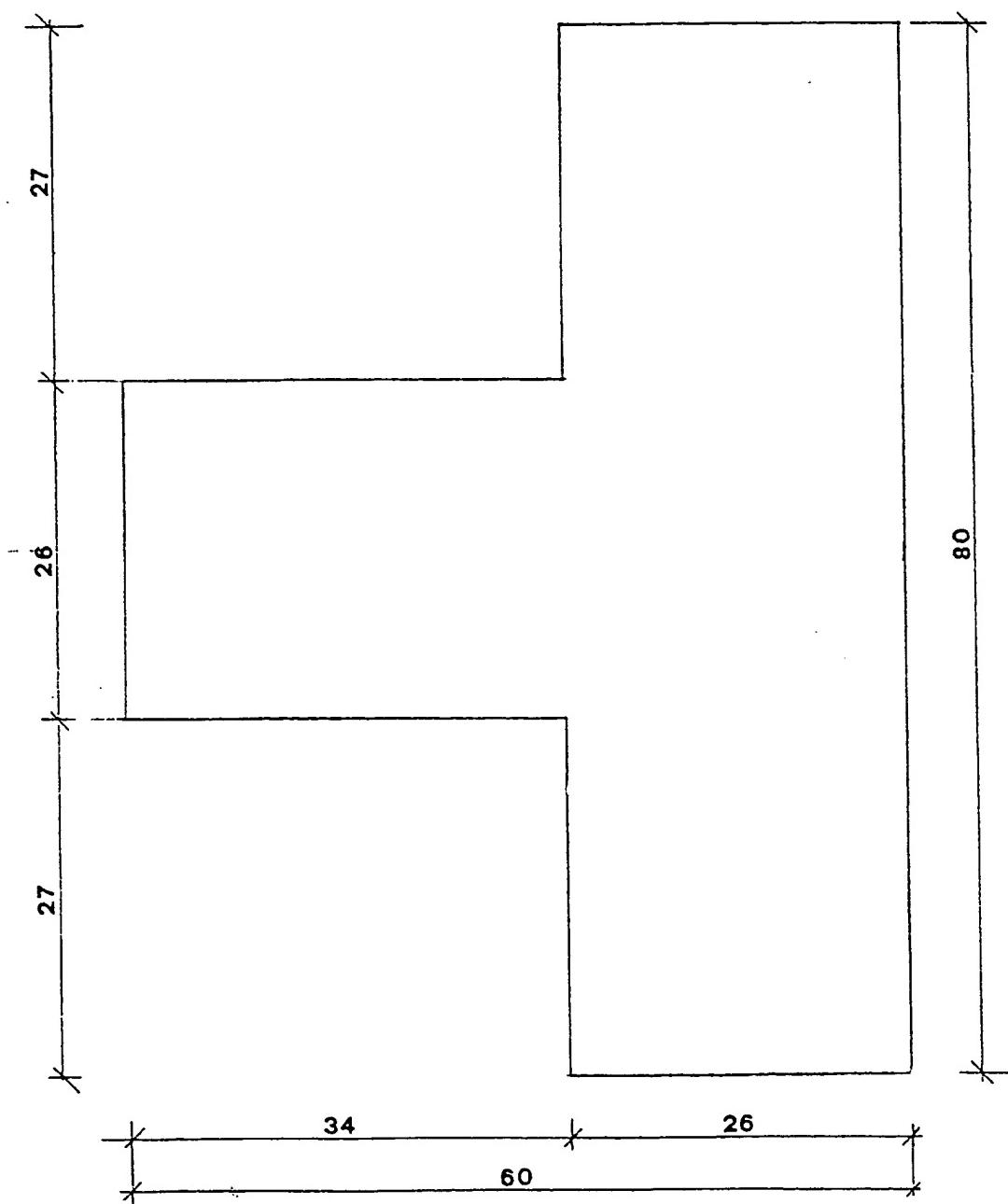


fig.18



scale 1:5

fig.19

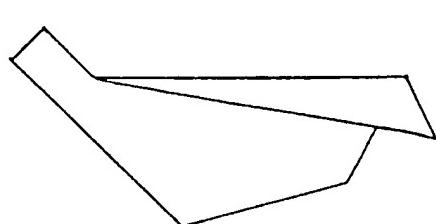


fig.20

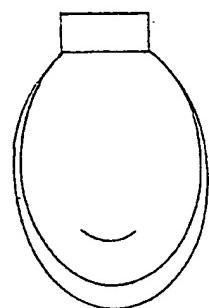


fig. 21

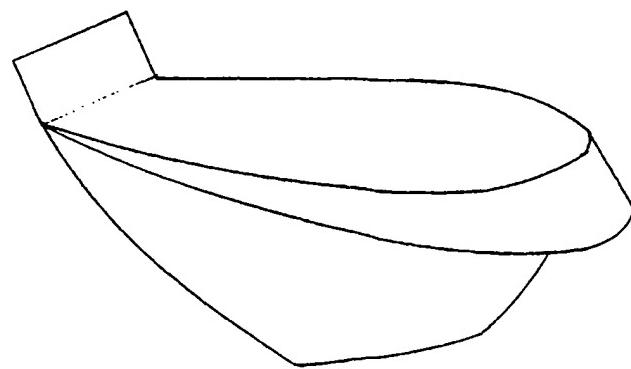
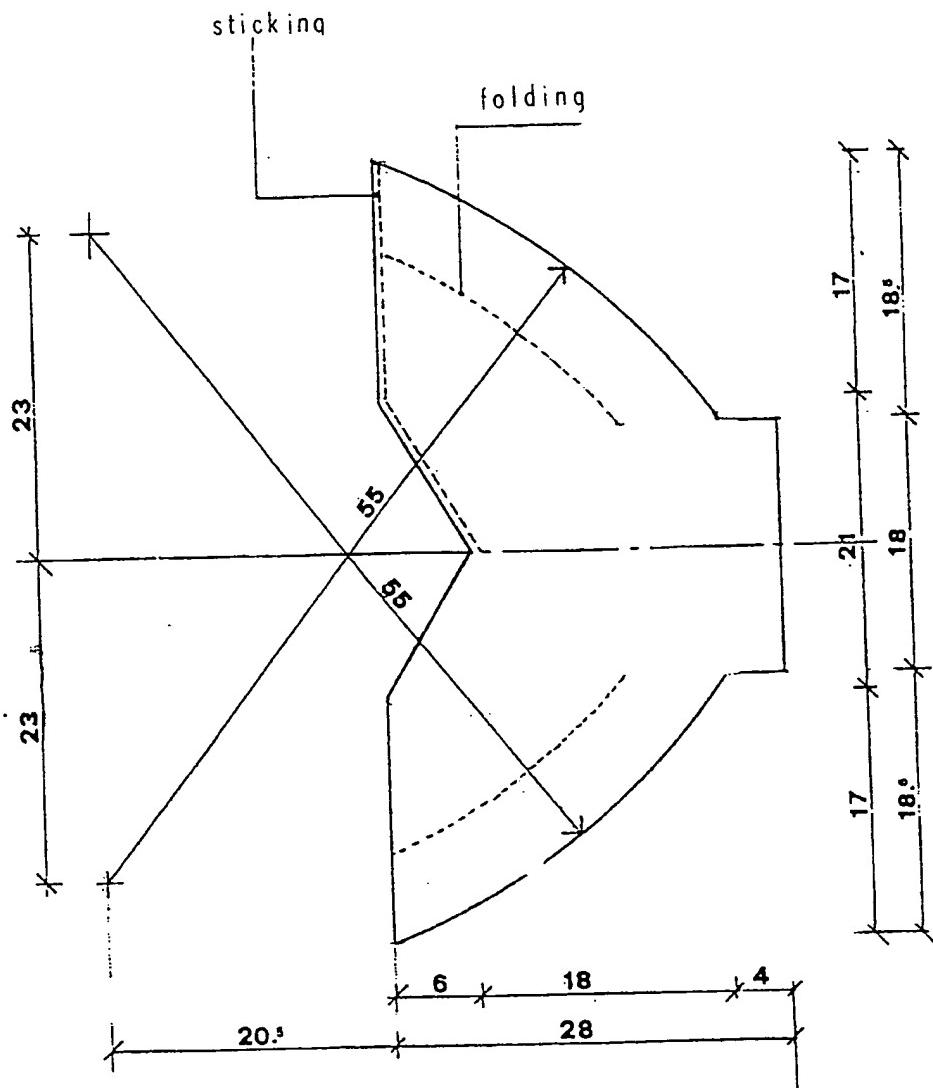


fig.22



scale 1:5

fig. 23

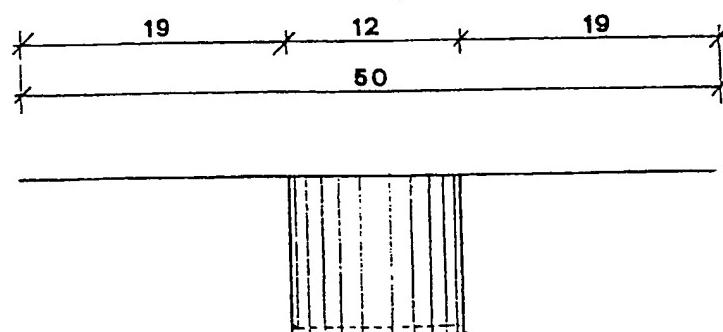
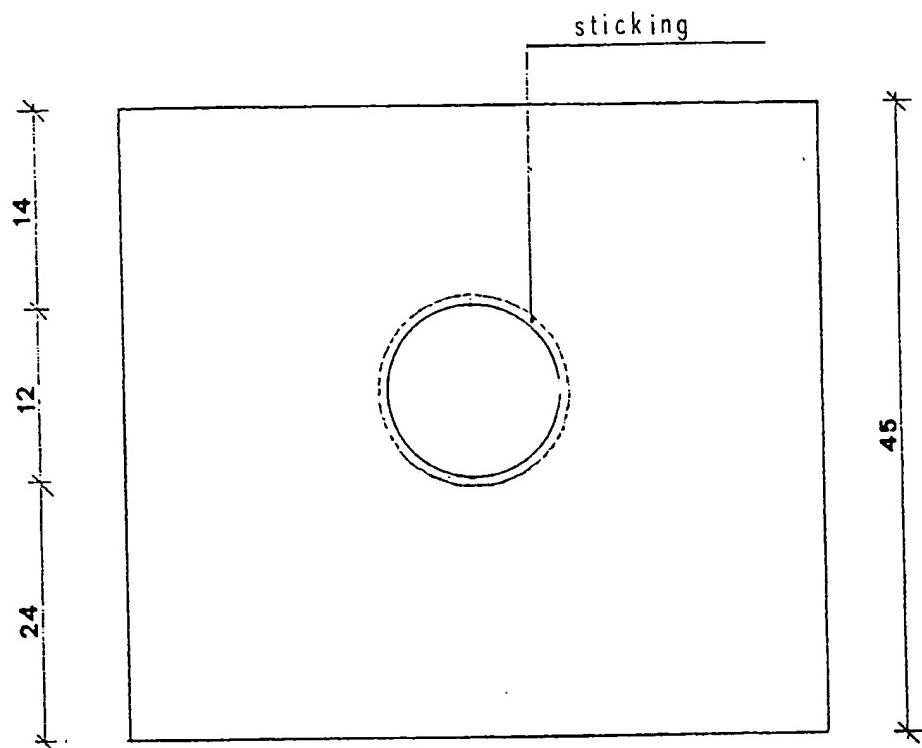


fig. 24

scale 1:5

fig.25

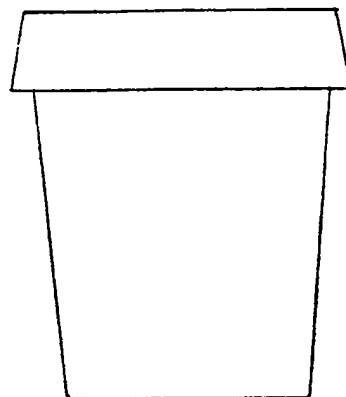


fig.26

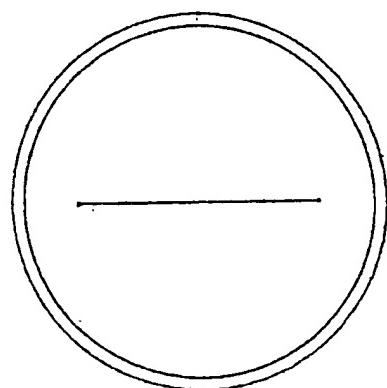
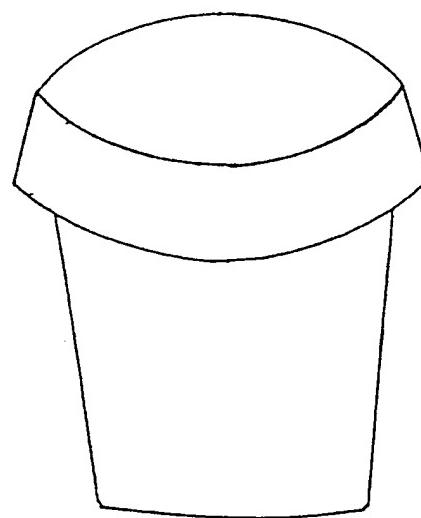
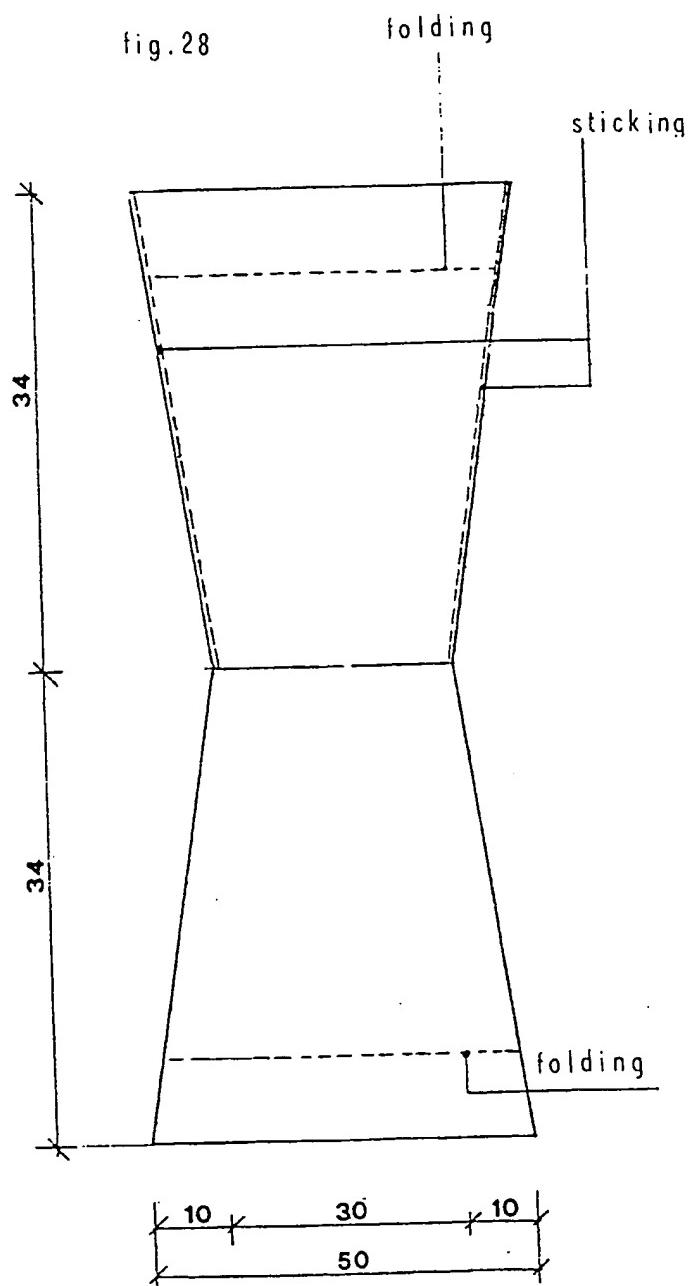


fig.27





scale 1:5

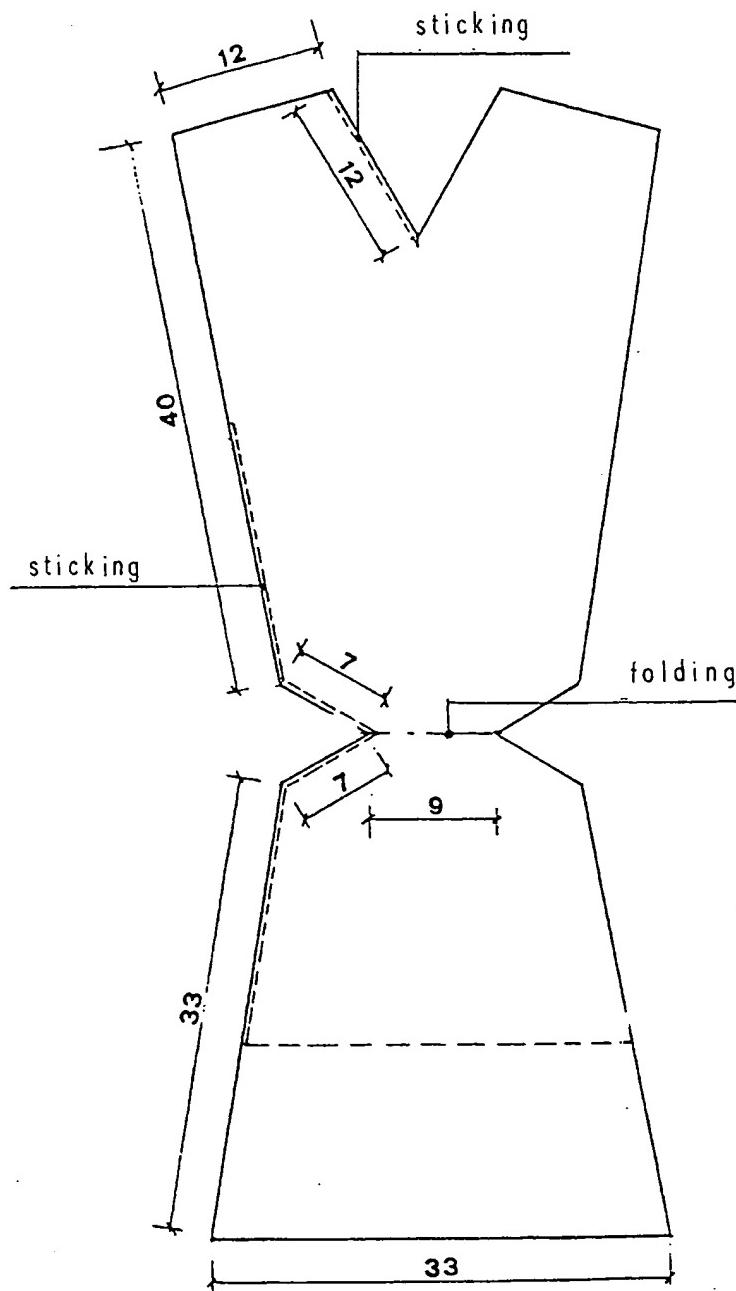


fig. 29

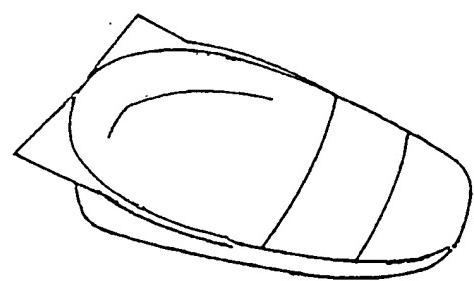


fig. 30

fig.31

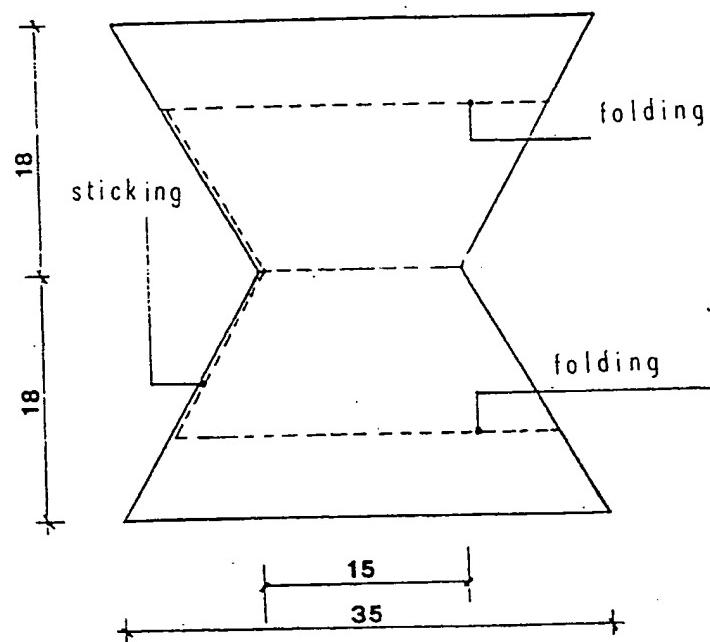


fig.32

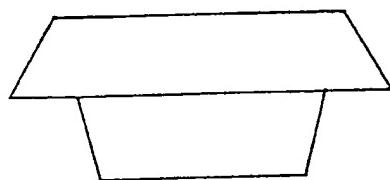


fig.33

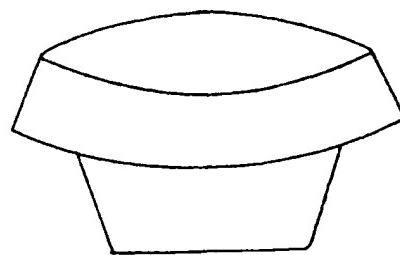
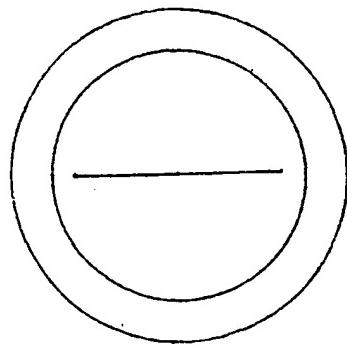


fig.34

INTERNATIONAL SEARCH REPORT

Int'l	Application No
PCT/IT 98/00328	

A. CLASSIFICATION OF SUBJECT MATTER				
IPC 6	A47K11/04	A47K13/14	A61G9/00	A01K23/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A47K A61G A01K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 86 04222 A (BARREAU JEAN PAUL) 31 July 1986	1,2
Y	see abstract see page 1, line 2 - line 14 see page 2, line 3 - line 11 see page 2, line 33 - page 3, line 1 see page 4, line 3 - line 36 see page 5, line 21 - line 29; figures 1,2 ---	3-6
X	US 4 882 794 A (STEWART III ELIJAH E) 28 November 1989	9,10,13, 14
Y	see the whole document ---	22
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Data of mailing of the International search report
16 February 1999	23/02/1999
Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016	Porwoll, H

INTERNATIONAL SEARCH REPORT

Int'l Application No
PCT/IT 98/00328

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 229 699 A (HARRISON IAN ALEXANDER) 3 October 1990	9,10,16, 17
Y	see page 1, line 1 - page 2, line 18	7,8,15, 20
A	see page 5, line 9 - line 21 see page 6, line 22 - page 8, line 3; figures	1,5,22
X	US 4 996 727 A (WYATT CYNTHIA M) 5 March 1991	13,21
Y	see column 1, line 5 - line 34 see column 2, line 50 - column 4, line 40; figures	22
X	EP 0 296 143 A (BRINA CONTACT SPRL) 21 December 1988	12
Y	see the whole document	7,8,15, 20
A	---	5,6,11
X	US 4 269 148 A (HOLLEY-DONAWA GLORIA) 26 May 1981	18
Y	see column 2, line 13 - line 19 see column 3, line 7 - line 43; figures 1-3	19
Y	DE 35 24 249 A (LANGENFELD BERND A) 8 January 1987 see the whole document	3
Y	FR 2 631 225 A (VALENTIN JEAN) 17 November 1989 see the whole document	4
Y	DE 21 03 449 A (STRÜBBE) 17 August 1972 see page 3, line 3 - line 33; figures	5,6
Y	US 5 146 874 A (VIDAL STELLA M) 15 September 1992 see column 38, line 23 - column 41, line 32; figures 70-76	19
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Information on patent family members

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